CONSTRUCTION STANDARD SPECIFICATION

SECTION 07900

JOINT SEALANTS

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PART 1 - GENERAL

1.01 SUMMARY

A. General: This section includes furnishing and installing construction sealants, backers and related materials, as scheduled and/or as called for on Contract documents. It does not include sealants for glazing, roof systems and firestop systems.

B. Related Sections: Refer to the following sections for related work:

1. Section 03300, “Cast-In-Place Concrete.”
2. Section 03351, “Exposed Aggregate Concrete Slabs.”
3. Section 04220, “Concrete Masonry.”
4. Section 07270, “Firestop and Smokestop Systems.”
5. Section 08110, “Steel Doors and Frames.”
6. Section 09250, “Gypsum Drywall.”

1.02 REFERENCES

A. American Society of Testing and Materials (ASTM)

C792 Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants

C834 Specification for Latex Sealing Compounds

C919 Practice for Use of Sealants in Acoustical Applications

C920 Specification for Elastomeric Joint Sealants

C1193 Guide for Use of Joint Sealants

D217 Test Method for Cone Penetration of Lubricating Grease

D1056 Specification for Flexible Cellular Materials - Sponge or Expanded Rubber

1.03 DEFINITIONS

A. Type: Defines whether products are premixed or require mixing at job site.

B. Type S: Products furnished in prepackaged cartridges or other forms in which no job-site mixing is required.

C. Grade: Defines the flow characteristics of the sealant.

D. Grade P: Products having sufficient flow to fill joints in horizontal surfaces and remain level and smooth at temperatures as low as 40 degrees Fahrenheit (4.4 degrees Celsius).

E. Grade NS: Nonsag or gunnable sealant that permits applicatioin in joints on vertical serfaces without sagging or slumping when applied at temperatures between 40 degrees F (4.4 degrees C) and 122 degrees F (50 degrees C).

F. Class: Identifies sealants according to their tested capabilities.

G. Use T: Classifies sealants designed for joints in surfaces subject to pedestrian and vehicular traffic.

H. Use NT: Classifies sealants designed for nontraffic exposure.

I. Use M, G, A: Refers to sealants which remain adhered, within given parameters, to various standard specimens.

J. Use O: Refers to substrate materials other than M, G, and A.

1.04 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Section 01300, “Descriptive Submittals.”

B. Product Data Sheet: Submit manufacturer’s catalog data and application instructions for each material proposed for use.

C. Asbestos-Free and Lead-Free Paint Certification: Submit manufacturer’s written certification that all materials are free of asbestos and lead paint.

D. Manufacturer’s Certifications: Submit manufacturer’s representative certification that the proposed products are recommended and compatible with each other and substrates for the intended applications.

E. Material Safety Data Sheets (MSDS): Submit MSDS for joint sealant products.

F. Sealant Schedule: List type, grade, class, use classification and joint sealant backing for each proposed sealant system in project.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed joint sealant applications similar in material, design and extent to that indicated for project that have resulted in construction with a record of successful in-service performance.

B. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

1.06 DELIVERY, STORAGE, AND HANDLING

Deliver and store packaged materials in manufacturer's original unopened containers with seals unbroken and labels intact until time of use. Store materials off ground and under cover to prevent damage or contamination to materials by water, freezing, foreign matter or other causes. Promptly remove from site any materials which show evidence of damage and immediately make all replacements necessary.

1.07 PROJECT CONDITIONS

Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:

A. When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40 degrees F (4.4 degrees C).

B. When joint substrates are wet due to rain, frost, condensation, or other causes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Manufacturers: Products made by the following manufacturers, provided they comply with requirements of Contract documents, will be among those considered acceptable, however, it is the contractor's responsibility to provide only products compatible with adjacent materials in the assembly.

Dow Corning Corporation
General Electric Co., GE Silicones
Pecora Corporation
Sonneborn Building Products Division/Chemrex, Inc.
Tremco, Inc.

2.02 MATERIALS

A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application.

B. Colors: If not otherwise indicated, or chosen at time of submittals, provide color of exposed joint sealers to closely match finish color of adjacent surfaces.

C. Sealant Type: Provide type S sealants.

D. Elastomeric Joint Sealants: Type S; Grade NS; Class 25; Uses T, NT, M, G, A, and as applicable to uses indicated, and O. Elastomeric joint sealers shall be used for interior surfaces where noted and at all non-protected exterior applications. Provide manufacturer's standard chemically curing, elastomeric silicone sealant, which complies with ASTM C920 requirements, including those for type, grade, class and uses, and as recommended by the manufacturer for the intended use.

E. Latex Joint Sealants: Type S; Grade NS; Class 12 1/2; Uses per ASTM C834. Latex joint sealers may be used for interior and protected exterior applications only. Provide manufacturer's standard one-part, non-sag, mildew-resistant, paintable latex sealant that is recommended for exposed applications on interior and protected exterior locations and that accommodates indicated percentage change in joint width existing at time of installation without failing either adhesively or cohesively.

1. Acrylic-Emulsion Sealant: Provide product complying with ASTM C834 that accommodates joint movement of not more than five (5%) percent in both extension and compression for a total of ten (10%) percent.

2. Silicone Emulsion Sealant: Provide product complying with ASTM C834 and, except for weight loss measured per ASTM C792, with ASTM C920 that accommodates joint movement of not more than 25 percent in both extension and compression for a total of 50 percent.

F. Acoustical Joint Sealant

1. Acoustical Sealant: Type S; Grade NS. Provide manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C834 that is effective in reducing airborne sound transmission through perimeter joints and openings in building construction.

2. Acoustical Sealant for Concealed Joints: Type S; Grade NS. Provide manufacturer's standard, non-drying, non-hardening, non-skinning, non-staining, gunnable, synthetic rubber sealant complying with ASTM D217 (290-310) recommended for sealing interior concealed joints.

G. Tape Sealants: Provide manufacturer's standard, solvent-free, butyl-based tape sealant with a solid content of 100 percent formulated to be non-staining, paintable and non-migrating in contact with nonporous surfaces with or without reinforcement thread to prevent stretch and packaged on rolls with a release paper on one side.

H. Preformed Foam Sealants: Provide manufacturer's standard preformed, precompressed, impregnated open-cell foam sealant manufactured from high-density urethane foam impregnated with a non-drying, water repellent agent, factory-produced in precompressed sizes and in roll or stick form to fit joint widths indicated and to develop a watertight and airtight seal when compressed to the degree specified by manufacturer and complying with the following requirements:

Sealant shall be permanently elastic, mildew-resistant, non-migratory, non-staining and compatible with joint substrates and other joint sealants.

I. Joint Sealant Backing: Provide sealant backings of material and type that are non-staining, are compatible with joint substrates, sealants, primers and other joint fillers, and are approved for applications indicated by sealant manufacturer. Only elastomeric joint fillers may be used on exterior applications.

1. Plastic Foam Joint Fillers: Provide preformed, compressible, resilient, non-staining, non-waxing, non-extruding strips of open cell flexible plastic foam of size, shape and density to control sealant depth and otherwise contribute to optimum sealant performance. Provide products compatible with sealant and recommended by sealant manufacturer for the intended use.

2. Elastomeric Tubing Joint Fillers: Neoprene, butyl or silicone tubing complying with ASTM D1056, non-absorbent to water and gas, capable of remaining resilient at temperatures down to 26 degrees F (-3 degrees C). Provide products compatible with sealant and recommended by sealant manufacturer for the intended use, with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.

3. Bond-Breaker Tape: Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.03 MISCELLANEOUS MATERIALS

A. Primer: Provide material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 PREPARATION

General: Comply with manufacturer's recommendations and with the following:

A. Remove all foreign materials from joint substrates which could interfere with adhesion of joint sealer, including oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

B. Clean concrete, masonry, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, acid washing, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers.

C. Remove laitance and form release agents from concrete prior to installation of sealants.

D. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile and other nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

E. Prime or seal joint surfaces where recommended by the sealant manufacturer. Confine primer/sealer to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.02 INSTALLATION OF JOINT SEALERS

A. General: Comply with joint sealer manufacturer's printed installation instructions applicable to products and applications indicated, and with ASTM C1193 and ASTM C919.

B. Backing: Provide backing material in the joint recess whenever necessary to control the depth of the sealant. One backer rod shall be a minimum of 33% oversized for closed cell and a minimum of 50% oversized for open cell backer rod.

C. Set joint filler units at depth or position in joint as indicated to coordinate with other work, including installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between ends of joint filler units.

D. Install sealant backer rod for liquid-applied sealants, except where shown to be omitted by the sealant manufacturer for application indicated.

E. Install bond breaker tape where indicated or where required by manufacturer's recommendations to ensure that liquid-applied sealants will perform as intended.

F. Employ only proven installation techniques, which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and vertical surfaces, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

G. Install liquid-applied sealant to depths shown or, if not shown, as recommended by the sealant manufacturer but within the following general limitations, measured at center (thin) section of beads (not applicable to sealants in lapped joints):

1. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2 inch (12.7 mm) deep nor less than 1/4 inch (6.35 mm) deep.

2. For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in range of 75% to 125% of joint width.

H. Spillage: Do not allow sealants to overflow from confines of joints, or to spill onto adjoining work. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

I. Do not overheat or reheat hot-applied sealants; discard and do not use this material.

J. Recess exposed edges of gaskets and exposed joint fillers slightly behind adjoining surfaces, except as otherwise shown or specified so that compressed units will not protrude from joints.

3.03 CURING AND PROTECTION

Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Cure and protect sealants in a manner which will minimize increases in modulus of elasticity and other accelerated aging effects. Replace or restore sealants which are damaged or deteriorated during the construction period.

END OF SECTION